WHY ENGINEERING?

BECAUSE ENGINEERING OFFERS

- OPPORTUNITY TO BE CREATIVE
- OPPORTUNITY FOR MANAGEMENT AND LEADERSHIP
- CHALLENGE OF DESIGN, INVENTION AND INNOVATION
- PRIDE OF PROFESSIONAL STATUS AND REMUNERATION
- NUMEROUS EMPLOYMENT OPPORTUNITIES IN ALL INDUSTRIES

LOYOLA OF MONTREAL

1967-1968

7141 SHERBROOKE ST. WEST
MONTREAL, TEL. 482-0320

Faculty of Engineering

The overall objectives of the Faculty of Engineering are the growth and development of the student into a self-identifiable person and the acquisition by him of the knowledge upon which to build his career. In the concrete, these goals are proposed to the student as a personal search for excellence and the forming of himself to manage industry, whether technically or administratively.

While the subjects of the curriculum — technology, science, humanities, professional practice — have to be presented as discrete disciplines, yet the Faculty seeks at all times to make the student aware that he must integrate them into his personality so that they become the foundation for supporting his chief function in society — the making of decisions.

Conditions for entry into Engineering are given on p. 116.

engineering

G. W. Joly Associate Dean
C. Goldman Associate Professor
K. I. Krakow Associate Professor
S. J. Kubina Associate Professor
Rev. H. Wardell, S.J. Assistant Professor
J. A. Krantzberg Lecturer
S. A. Neilson Lecturer
J. E. Orr Special Lecturer
K. D. Henderson Special Lecturer
C. K. Adkar Special Lecturer
D. Kaufman Special Lecturer

The Faculty of Engineering offers a five-year programme of studies in Chemical, Civil, Electrical and Mechanical Engineering. In 1967/8 the First, Second and Third Years of this programme will be presented. The offering of the Fourth and Fifth years will be delayed until Loyola's status as a university has been granted official recognition. In the meanwhile, arrangements have been made for students to transfer to the Fourth Year of other universities in the area.

The courses of the first year and the second year constitute a common programme for all students in them, while the courses of the third year provide specialized work in Chemical, Civil, Electrical and Mechanical Engineering.

Students of the First and Second Year of Engineering are invited to consult the Dean of Engineering or any member of the staff about the specialization in which they expect to engage in the Third and succeeding years.

promotion

For promotion, an overall average of at least 60% of the weighted marks is required, and at least 50% in each separate examination. A student who fails to achieve promotion and wishes to discuss the possibility of continuing his academic career in the Faculty of Engineering must apply IN WRITING to the Chairman, Engineering, before July 15.

admissions

The requirements for admission are as follows :

Canadian Applicants
to first year :

1. For consideration for entry, an applicant must have :
   a) achieved Junior Matriculation;
   b) passed 11 papers in June, amongst which must be :
      English (2 papers),
      Intermediate Algebra,
      Trigonometry,
      Physics,
      Chemistry;
   c) achieved an overall average of at least 70% in these 11 papers and a good second class mark in the compulsory ones listed in b) above.
2. Canadian applicants whose qualifications are different from those above should apply IN WRITING to Loyola College for a review of them.

applicants from abroad
to first year :

Applicants who consider that their qualifications are equivalent to those specified for Canadian students are invited to submit them to Loyola College for review.

First year engineering

COURSE	Course Number	Weighted Mark	Lecture hours per week		Labs. etc. hrs. per week	
			First Term	Second Term	First Term	Second Term
MECHANICS I	001	100	2	2	—	2
VECTOR ANALYSIS	101	100	2	2	—	—
ENGINEERING GRAPHICS I	201	100	—	—	3	3
PROFESSIONAL PRACTICE I	301	50	1	1	—	—
CHEMISTRY	101/2	150	3	3	3	3
ENGLISH	101	100	3	3	—	—
FRENCH	120	100	2	2	1	1
CALCULUS	110	100	3	3	—	—
HEAT & SOUND	103	100	2*	—	2	—
TOTAL :		900	18	16	9	9

*3 hrs/week, alternate weeks.

Second year engineering

COURSE	Course Number	Weighted Mark	Lecture hours per week		Labs. etc. hrs. per week	
			First Term	Second Term	First Term	Second Term
MECHANICS II	002	100	2	2	—	—
ENGINEERING PROBLEMS	102	50	—	—	2	2
ENGINEERING GRAPHICS II	202	100	1	1	2	2
PROFESSIONAL PRACTICE II	302	50	1	1	—	—
*TECHNICAL REPORT	313	Year 3	—	—	—	—
MATERIALS SCIENCE I	802	100	2	2	—	—
PHYSICAL CHEMISTRY	231	100	3	3	—	—
ALGEBRA	212	100	2	2	—	—
CALCULUS	210	100	3	3	—	—
**HEAT & SOUND	103	100	2	—	2	—
LIGHT & ELECTRICITY	206	150	2	2	2	2
PHILOSOPHY	—	100	2	2	—	—
THEOLOGY	101	100	2	2	—	—
TOTAL :		1150	22	20	8	6

*Prepared in summer following Year 2. Counted as part of Year 3.
Do not register in Year 2.

**In 1967/8 only. 3 hrs/week, alternate weeks.

Third year engineering — Chemical

COURSE	Course Number	Weighted Mark	Lecture hours per week		Labs. etc. hrs. per week	
			First Term	Second Term	First Term	Second Term
STR. OF MATERIALS I	033	100	2	2	—	—
NUMERICAL ANALYSIS & COMP.	133	50	2	—	2	—
***PROFESSIONAL PRACTICE III	303	—	—	—	—	—
*TECHNICAL REPORT	313	100	—	—	—	—
CHEM. ENGINEERING PRINC.	403	100	2	2	2	2
CIRCUIT ANALYSIS	633	100	2	—	3	—
ELECTRICAL ENGINEERING	643	100	—	3	—	3
INORG. QUANT. ANALYSIS	212	100	1	1	3	3
PHYS. CHEM. LAB.	333	100	—	—	4	—
DIFFERENTIAL EQUATIONS	312	100	2	2	—	—
ENGINEERING MATHS.	313	100	2	2	—	—
**ELECTRICITY & LIGHT	206	150	2	2	2	2
***PHILOSOPHY	—	—	—	—	—	—
***THEOLOGY	—	—	—	—	—	—
TOTAL :		1100	15	14	16	10

*Prepared in summer following Year 2.

**In 1967/68 only.

***Not required in 1967/68.

Third year engineering — Civil

COURSE	Course Number	Weighted Mark	Lecture hours per week		Labs. etc. hrs. per week	
			First Term	Second Term	First Term	Second Term
STR. OF MATERIALS I	033	100	2	2	—	—
MECH. OF MACHINES	053	50	2	—	3	—
***SYSTEMS ANALYSIS	103	—	—	—	—	—
NUMERICAL ANALYSIS	133	50	2	—	2	—
***PROFESSIONAL PRACTICE III	303	—	—	—	—	—
*TECHNICAL REPORT	313	100	—	—	—	—
SURVEYING	523	50	2	—	2	—
CIRCUIT ANALYSIS	633	100	2	—	3	—
ELECTRICAL ENGINEERING	643	100	—	3	—	3
MATERIALS SCIENCE III	813	50	—	—	—	3
****GEOLOGY	202	100	—	3	—	3
DIFFERENTIAL EQUATIONS	312	100	2	2	—	—
ENGINEERING MATHS.	313	100	2	2	—	—
**ELECTRICITY & LIGHT	206	150	2	2	2	2
***PHILOSOPHY	—	—	—	—	—	—
***THEOLOGY	—	—	—	—	—	—
TOTAL :		1050	16	14	12	11

*Prepared in summer following Year 2.

**In 1967/68 only.

***Not required in 1967/68.

****New course in 1968/69.

Third year engineering — Electrical

COURSE	Course Number	Weighted Mark	Lecture hours per week		Labs. etc. hrs. per week	
			First Term	Second Term	First Term	Second Term
STR. OF MATERIALS I	033	100	2	2	—	—
SYSTEMS ANALYSIS	103	50	—	—	2	2
NUMERICAL ANALYSIS	133	50	2	—	2	—
***PROFESSIONAL PRACTICE III	303	—	—	—	—	—
*TECHNICAL REPORT	313	100	—	—	—	—
CIRCUIT ANALYSIS	623	150	2	2	3	3
SOLID STATE PHYSICS	653	100	—	3	—	—
MATERIALS SCIENCE III	813	50	—	—	—	3
DIFFERENTIAL EQUATIONS	312	100	2	2	—	—
ENGINEERING MATHS.	313	100	2	2	—	—
**ELECTRICITY & LIGHT	206	150	2	2	2	2
MODERN PHYSICS	303	50	3	—	—	—
***PHILOSOPHY	—	—	—	—	—	—
***THEOLOGY	—	—	—	—	—	—
TOTAL :		1000	15	13	9	10

*Prepared in summer following Year 2.

**In 1967/68 only.

***Not required in 1967/68.

Third year engineering — Mechanical

COURSE	Course Number	Weighted Mark	Lecture hours per week		Labs. etc. hrs. per week	
			First Term	Second Term	First Term	Second Term
STR. OF MATERIALS I	033	100	2	2	—	—
MECHANICS OF MACHINES	053	50	2	—	3	—
SYSTEMS ANALYSIS	103	50	—	—	2	2
NUMERICAL ANALYSIS	133	50	2	—	2	—
MECHANICAL DESIGN	203	50	—	—	—	3
***PROFESSIONAL PRACTICE III	303	—	—	—	—	—
*TECHNICAL REPORT	313	100	—	—	—	—
CIRCUIT ANALYSIS	633	100	2	—	3	—
ELECTRICAL ENGINEERING	643	100	—	3	—	3
EXPERIMENTAL ENGINEERING	703	50	—	1	—	2
MATERIALS SCIENCE II	803	100	1	—	3	3
DIFFERENTIAL EQUATIONS	312	100	2	2	—	—
ENGINEERING MATHS.	313	100	2	2	—	—
**ELECTRICITY & LIGHT	206	150	2	2	2	2
***PHILOSOPHY	—	—	—	—	—	—
***THEOLOGY	—	—	—	—	—	—
TOTAL :		1100	15	12	15	15

*Prepared in summer following Year 2.

**In 1967/68 only.

***Not required in 1967/68.

APPLIED MECHANICS

001 Mechanics I. G. W. Joly and J. Krantzberg

Position, velocity and acceleration of a rigid body executing plane motion. Relative motion. A preliminary study of the dynamics of curvilinear plane motion in order to establish the principles of center of gravity and moment of inertia, followed by a development of these ideas in depth. So as to prepare the student for the later presentation of static equilibrium as a special case of dynamics, Mechanics I commences with the intuitional view of the conditions of static equilibrium through a study of simple space frames. The vector approach is used freely.

Lectures : 2 hours per week, both terms.

Problems : 2 hours per week, second term.

002 Mechanics II. C. Goldman

The three general approaches to dynamics : torque and inertia-acceleration, work and kinetic energy, impulse and momentum.

The selection of the appropriate general approach in each problem is emphasized and numerical results are expected.

Forces in rotating bodies. Gyroscopes. The vector approach is used freely.

Lectures : 2 hours per week, both terms.

033 Strength of Materials I. C. Goldman

Elastic Theory of matter; axial, thermal and bending stresses; combined stress, tension, deflection of beams by differential equation of elastic line, moment area, superposition and conjugate beam methods; statically indeterminate beams; energy of strain; introduction of photostress analysis and theory of models.

Lectures : 2 hours per week for both terms.

053 Mechanics of Machines. K. I. Krakow

Analytical and graphical velocity, acceleration and force analysis of mechanisms; static and dynamic balancing of rotating and reciprocating mechanisms; design of cams, gears, gear trains.

Lectures : 2 hours per week, first term.

Problems : 3 hours per week, first term.

ENGINEERING ANALYSIS

101 Vector Analysis G. W. Joly and J. Krantzberg

Position vectors, addition of vectors, angle between two lines, equation of plane in normal form, scalar product, projection of one line on another, vector product, shortest distance between a point and a line or plane, shortest distance between two lines, moment of a force about a point, moment of a force about a line, triple scalar product.

Lectures : 2 hours per week, two terms.

102 Engineering Problems. C. Goldman

Solving of problems in Mechanics, and Mathematics. Great emphasis is laid on setting up problems in Engineering.

Lectures : 2 hours per week, two terms.

103 Systems Analysis. K. Krakow

The application of Mathematics to the solutions of Civil, Electrical and Mechanical Engineering problems.

Text : Haberman, C. M. — *Engineering Systems Analysis.*

Lectures : 2 hours problems per week, both terms.

133 Numerical Analysis and Computation Methods.

S. Kubina

An introduction to Digital Computer Programming and associated methods of numerical analysis usefull in the solution of engineering problems. Laboratory periods are devoted to the solution of problems using mechanical calculating machines and IBM 1620 Computer.

Lectures : 2 hours per week, one term.

Computer Lab. : 2 hours per week, one term.

ENGINEERING DESIGN.

201 Engineering Graphics I. H. Wardell

Orthographic projection, auxiliary and oblique views, dimensioning, sectioning. Geometrical construction of ellipses, hyperbolas, cycloids, involutes, etc. Pictorial drawings including isometric, oblique. Common machine elements; screws, welding, structural shapes. Free-hand sketching, working and assembly drawings.

Lectures : 1 hour per week for two terms.

Lab. : 2 hours per week for two terms.

Text : French Engineering Drawing, McGraw-Hill.

202 Engineering Graphics II. H. Wardell

Theory of orthographic projection, auxiliary views, lines, planes, intersections, dihedral angles, parallelism, perpendicularity, revolution, developments, mining and civil engineering problems involving principles covered in the course.
Lectures : 1 hour per week for two terms.
Lab. : 2 hours per week for two terms.
Text : Descriptive Geometry. Paré-Loving-Hill.

203 Mechanical Design. K. I. Krakow

Mechanical design involving elementary stress analysis; relation between design and manufacturing techniques, presentation of design briefs.
Problems : 3 hours per week, 2nd term.

PROFESSIONAL PRACTICE.

301 Professional Practice I. S. A. Neilson

Use of English, both oral and written in engineering practice, mechanics of presentation, graphical representation, reproduction methods, job applications; specifications.
Lecture : One hour per week, both terms.

302 Professional Practice II. S. A. Neilson

Continuation of Course 301 with emphasis on Public Speaking — Conference Techniques, etc.
Lectures : 1 hour per week, both terms.

303 Professional Practice III.

A course offered by the Accounting Department (310) to students in the Faculties of Arts, Science and Engineering: Includes explanation and use of Accounting; major forms of Business entities; analysis and interpretation of Financial Statements; control of business operations, budgeting and profit planning; function and use of Cost Accounting; Income Tax Theory; use of Machine Accounting; Commercial and Life Insurance; Estate Planning, including Gift Tax, Federal Estate Tax and Provincial Succession Duties.

313 Technical Report. S. A. Neilson

Students entering the Third Year of Engineering must submit a Technical Report. The most suitable subject for the Report is a topic drawn from the experience during his summer work. If, however, a student's summer experience does not provide a reasonable topic, he may visit and inspect any engineering, scientific or industrial project in course of construction or operation, and write upon his observations. The Report should be between 2000 and 4000 words in length and must be handed in not later than Registration Day.

CHEMICAL ENGINEERING.

403 Chemical Engineering Principles. K. D. Henderson

Application of physical and chemical principles to some fundamental problems in Chemical Engineering.
Lectures : 2 hours per week, both terms.
Lab. : 2 hours per week, both terms.

CIVIL ENGINEERING.

523 Surveying. C. Goldman

Types of surveys; description and use of level, compass, transit, chain and tape; levelling; traverses, stadia. Route surveys involving simple, spiral, and vertical curves. Grades, cross-sections, area and earth-work calculations. Use of planimeter; Triangulation; Hydrographic surveying.
Lectures : 2 hours per week, one term.
Lab. : 2 hours per week, one term.

ELECTRICAL ENGINEERING.

623 Circuit Analysis and Energy Conversion. S. Kubina

The fundamentals of the analysis of linear circuits to study, time varying, periodic and non-periodic currents, and voltages; node and loop analysis; network theorems; time frequency domain relationships; polyphase circuits; Fourier series, Laplace transforms; coupling elements and coupled circuits; ideal transformers; controlled sources. Semiconductor electronics. Simple amplifier circuits, frequency response. Simple rectifier and modulator circuits. Analysis of a communication and a power system.
Lectures : 2 hours per week, two terms.
Lab. : 3 hours per week, two terms.

633 Circuit Analysis. S. Kubina

Analysis of the response of linear circuits to steady and time varying currents and voltages; node and loop analysis; network theorems; Laplace transforms; poly-phase circuits.
Lectures : 2 hours per week, one term.
Lab. : 3 hours per week, one term.

643 Electrical Engineering. D. Kaufman

Elements of three phase circuits. D. C. machines, induction and synchronous machines and their terminal characteristics. Transistors, vacuum tubes and their equivalent circuits. Rectification and small signal amplifiers. Survey of a communications and dynamic measurement system. Feedback and control systems.
Lectures : 3 hours per week, one term.
Lab. : 3 hours per week, one term.

653 Solid State Physics. C. K. Adkar

Elementary crystal structure. Waves in periodic media. Lattice vibrations. Free electron models. Thermionic emission. Energy bands. Semiconductors, conduction by holes and electrons, doping, junctions. Magnetic and dielectric properties of solids.
Lectures : 3 hours per week, one term.

MECHANICAL ENGINEERING.

703 Experimental Engineering. K. I. Krakow

Theory and use of instruments; measurement of temperature, pressure, fluid flow, power; analysis of combustion products.
Lecture : 1 hour per week, second term.
Lab. : 2 hours per week, second term.

MATERIALS SCIENCE.

802 Material Science I. J. E. Orr

A systematic approach to the study of properties and behaviour of engineering materials including, the fundamental properties of materials, metallic phases, multiphase materials, structural effects on properties, stability under service stresses; thermal, electrical, chemical properties and corrosion; organic and non-metallic materials.
Lectures : 2 hours per week for two terms.

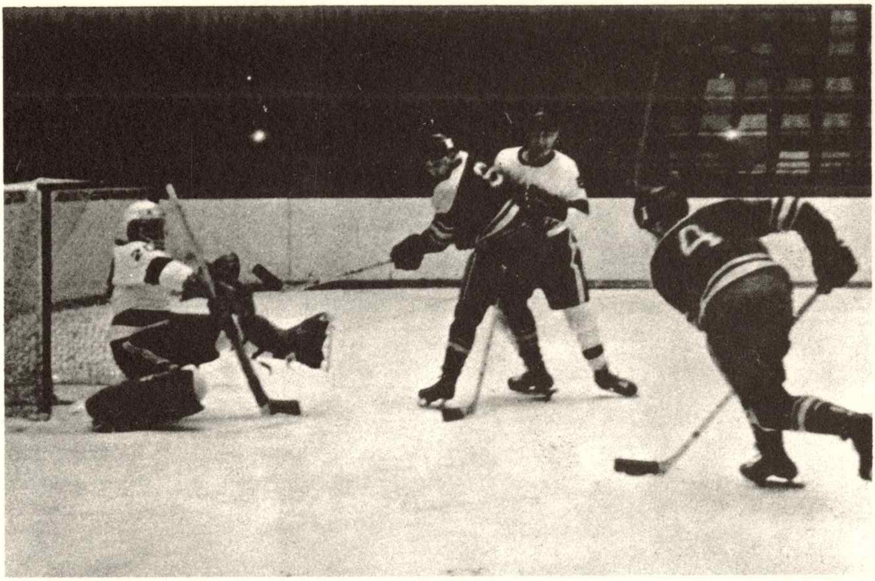
803 Materials Science II. J. E. Orr, K. I. Krakow
H. Wardell, C. Goldman

A theoretical and experimental study of metallic and non-metallic materials, their properties and processes used to control and alter their properties, their mechanical behaviour and experimental techniques used in investigating their behaviour, and the relation between mechanical behaviour and the physical and chemical properties of materials. Introduction to destructive and non-destructive testing using strain gauge and photo stress techniques.
Lectures : 1 hour per week, 1st term.
Lab. : 3 hours per week for both terms.

813 Materials Science III. C. Goldman

That part of Materials Science II relating to Strength of Materials.
Lab. : 3 hours per week, 2nd term.

NOTES



WHERE SOME OF THE "ENGINEERING" ACTION IS — The new Athletic Center, containing a hockey rink and gymnasium, permits an advanced physical education program to develop the total man.

- **LOYOLA'S BEAUTIFUL CAMPUS IS LOCATED AWAY FROM THE DOWNTOWN AREA OF MONTREAL AND IS EASILY ACCESSIBLE BY BUS AND TRAIN**
- **AMONGST AVAILABLE FACILITIES ARE:**

PARKING

HEALTH SERVICE

PLACEMENT SERVICE

STUDENT RESIDENCES

CAFETERIA

FOR FURTHER INFORMATION WRITE TO

DEAN OF ENGINEERING
LOYOLA COLLEGE
7141 SHERBROOKE ST. W.,
MONTREAL 28, QUEBEC.